quired with no *a priori* knowledge in a Low-Earth-Orbit (LEO) scenario in less than one second]. Modeling has shown that Navigator will be capable of acquiring signals down to 25 dB-Hz, appropriate for HEO missions. Navigator is built using the radiation-hardened ColdFire microprocessor and housing the most computationally intense functions in dedicated field-programmable gate arrays. The high performance of the algorithm and of the receiver as a whole are made possible by optimizing computational efficiency and carefully weighing tradeoffs among the sampling rate, data format, and data-path bit width.

This work was done by Luke Winternitz, Greg Boegner, and Steve Sirotzky of **Goddard Space Flight Center**. *Further information is contained in a TSP (see page 1).*
GSC-14793-1

Format for Interchange and Display of 3D Terrain Data

NASA's Jet Propulsion Laboratory, Pasadena, California

Visible Scalable Terrain (ViSTa) is a software format for production, interchange, and display of three-dimensional (3D) terrain data acquired by stereoscopic cameras of robotic vision systems. ViSTa is designed to support scalability of data, accuracy of displayed terrain images, and optimal utilization of computational resources. In a ViSTa file, an area of terrain is represented, at one or more levels of detail, by coordinates of isolated points and/or vertices of triangles derived from a texture map that, in turn, is derived from original terrain images. Unlike prior terrain-image software formats, ViSTa includes provisions to ensure accuracy of texture coordinates. Whereas many such formats are based on 2.5-dimensional terrain models and impose additional regularity constraints on data, ViSTa is based on a 3D model without regularity constraints. Whereas many prior formats require external data for specifying image-data coordinate systems, ViSTa provides for the inclusion of coordinate-system data within data files. ViSTa admits high-speed loading and display within a Java program. ViSTa is designed to minimize file sizes and maximize compressibility and to support straightforward reduction of resolution to reduce file size for Internet-based distribution.

This program was written by Paul Backes, Mark Powell, Marsette Vona, Jeffrey Norris, and Jack Morrison of Caltech for **NASA's Jet Propulsion Laboratory**. *Further information is contained in a TSP (see page 1).*

This software is available for commercial licensing. Please contact Don Hart of the California Institute of Technology at (818) 393-3425. Refer to NPO-30600.

Program Analyzes Radar Altimeter Data

Goddard Space Flight Center, Greenbelt, Maryland

A computer program has been written to perform several analyses of radar altimeter data. The program was designed to improve on previous methods of analysis of altimeter engineering data by (1) facilitating and accelerating the analysis of large amounts of data in a more direct manner and (2) improving the ability to estimate performance of radar-altimeter instrumentation and provide data corrections. The data in question are openly available to the international scientific community and can be downloaded from anonymous file-transfer-protocol (FTP) locations that are accessible via links from altimetry Web sites. The software estimates noise in range measurements, estimates corrections for electromagnetic bias, and performs statistical analyses on various parameters for comparison of different altimeters. Whereas prior techniques used to perform similar analyses of altimeter range noise require comparison of data from repetitions of satellite ground tracks, the present software uses a high-pass filtering technique to obtain similar results from single satellite passes. Elimination of the requirement for repeat-track analysis facilitates the analysis of large amounts of satellite data to assess subtle variations in range noise.

This program was written by Doug Vandemark and David Hancock of **Goddard Space Flight Center** *and Ngan Tran of Raytheon Co. For further information, contact Nona Cheeks at Nona.K.Cheeks.1@gsfc.nasa.gov.*
GSC-14664-1